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September 28, 1999

Ms. Magalie R. Salas
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, DC 20554

Ex Parte: Universal Service – CC Docket No. 96-45 and Forward-Looking Mechanism for Non-Rural LECs – CC Docket No. 97-160

Dear Ms. Salas,

In its filings made in the above-referenced proceeding, GTE identified serious flaws in the Commission's universal service cost model platform ("FCC Model") as well as the methodologies employed to develop the model's proposed input values. Where appropriate, GTE provided illustrative examples of these flaws, identified incorrect code, suggested corrections, and proposed alternative solutions, regardless of whether these solutions would increase or decrease modeled costs. In some cases, the Commission adopted GTE's proposed changes (FCC Model version released April 6, 1999). However, some of these revisions were reversed in the most recent version of the FCC Model platform (released June 2, 1999), without explanation.

In addition to these remaining problems, GTE has continued to analyze the FCC Model and has identified additional flaws and inconsistencies. As detailed in the attached exhibit, these problems consist of: General Platform Issues – concerns that relate to the overall design or structure of the FCC Model, and Specific Platform Issues – concerns that are specific to an algorithm or process.

In support of its analysis, GTE has again provided examples of the methodological flaws that remain and has proposed a number or corrections and alternative solutions (see Exhibit A attached). GTE urges the Commission to correct these and the myriad other problems that plague the FCC Model before adopting any input values.

Pursuant to Section 1.1206(a)(1) of the Commission's rules, and original and one copy of this letter are being submitted to the Office of the Secretary. Please associate this notification with the record in the proceeding indicated above.

If you have any questions regarding this matter, please call me at (202) 463-5293.

Sincerely,

W. Scott Randolph
Director - Regulatory Matters

cc: Lisa Zaina
Irene Flannery
Abdel Eqab
Katie King
Bob Loube
Bill Sharkey

EXHIBIT A

FCC UNIVERSAL SERVICE COST MODEL

Introduction

Throughout this proceeding, GTE has reviewed and commented upon the numerous versions of the universal service cost model platform ("FCC Model") released by the Federal Communications Commission ("FCC" or "Commission").[1] GTE's comments detailed the serious flaws in the FCC Model as well as the methodologies employed to develop the Commission's proposed input values. GTE has continued to analyze the FCC Model following and has identified additional flaws and inconsistencies. As detailed herein, these problems consist of:

- General Platform Issues – concerns that relate to the overall design or structure of the FCC Model, and
- Specific Platform Issues – concerns that are specific to an algorithm or process.

In support of the analysis that follows, GTE has, wherever possible, provided illustrative examples of the methodological flaws, identified incorrect

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[1] *See* In the Matter of Federal-State Joint Board on Universal Service; In the Matter of Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, *GTE Ex-Parte, Letter to Magalie R. Salas from Scott Randolph*, CC Docket Nos. 96-45 and 97-160 (Feb. 12, 1999); *GTE Ex-Parte, Letter to Magalie R. Salas from Scott Randolph*, CC Docket Nos. 96-45 and 97-160 (Feb.16, 1999); *GTE Ex-Parte, Letter to Magalie R. Salas from Scott Randolph*, CC Docket Nos. 96-45 and 97-160 (March 2, 1999); *Comments of GTE Service Corporation and its Affiliated Domestic Telephone Operating Companies in Response to Further Notice of Proposed Rulemaking*, CC Docket Nos. 96-45 and 97-160, (July 23, 1999); *GTE's Reply Comments*, CC Docket Nos. 96-45 and 97-160 (Aug. 6, 1999) (Collectively "GTE's Comments"). This docket – CC Docket Nos. 96-24 and 97-160 – is herein after referred to and cited as the "Universal Service Cost Model Docket."

code, suggested corrections, or proposed alternative solutions. GTE urges the Commission to correct these and the myriad other problems that plague the FCC Model before adopting any input values.

GENERAL PLATFORM ISSUES

1. The Model Does Not Produce Sufficient Intermediate Output Information To Permit Proper Analysis And Validation Of Its Processes, And The FCC Model Documentation Does Not Accurately Reflect The Modeling Process.

The FCC Model must produce more intermediate output data and timely, accurate, and thorough documentation than currently exists. The lack of sufficient detail precludes the user from analyzing the results. At a minimum, the FCC Model should provide the user with the *ability* to generate inventory data (quantity and price of items used to provide service) at the cluster level of detail in a format easily imported into a database or spreadsheet application. Without this modification, the FCC Model results cannot be analyzed and validated. AT&T and MCI, who for the most part support the FCC Model, have agreed in comments filed elsewhere that a cost model without "intermediate" output information seriously hampers any auditing and validation efforts.[2]

Two particular examples illustrate the importance of having intermediate output information and complete documentation:

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[2] Before the California Public Utilities Commission of the State of California, *AT&T/MCI's Response to Motion of GTE California for Extension of Time to File TELRIC Unbundled Network Element Cost Studies*, Docket Nos. R.93-04-003 & I.93-04-002, (July 24, 1997) at p. 4–5 & Attachment A. A copy of AT&T/MCI's comments is included as Attachment 1.

1) When the FCC Model reports Low Density Digital Loop Carrier ("DLC") Remote Terminals, it does not report the corresponding DLC lines. It is unrealistic to have DLC terminals without DLC lines. As a result, the FCC Model's DLC investments cannot be meaningfully analyzed.

2) FCC Model documentation defines low-density DLC units as having a line capacity of 96 or 24 lines.[3] This is inconsistent with the actual working of the FCC Model. The FCC Model counts low-density DLCs (96 and 24 lines) on fiber as High Density DLCs.[4] This inconsistency precludes complete analysis of the DLC portion of the FCC Model.

The FCC Model documentation must be updated to reflect exactly how the FCC Model designs the network. Notwithstanding the fact that 11 official versions of the FCC Model have been released since November 1998, the FCC Model documentation has not been updated since December 15, 1998, and does not accurately reflect the modeling process used in the most recent release (June 2, 1999). For example, the existing documentation indicates that the FCC Model will place multiple SAI's in clusters, although this never occurs.[5] Adequate

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[3] Model Documentation (December 15, 1998) at ¶ 5.2.1.

[4] Pascal logic printout.pas.

[5] HCPM.doc at p. 4 and 7. It is interesting to note that page 4 of the HCPM documentation state that the FCC Model considers "from 1 to 4 serving area interface terminals for each grid" whereas on page 7 of the same documentation it states "As a final step, the cluster module computes potential locations for either one SAI, or for a pair of SAIs." In any event, the model only seems to place one SAI."

and updated FCC Model documentation is necessary if users are to analyze and understand the FCC Model results.

2. The FCC Model Inputs Should Be Consolidated So That They Appear In Only One Location. This Would Eliminate Duplicate Inputs Of Different Structure Type And Resulting Problems In The FCC Model.

The FCC Model input structure must be adjusted so that specific input variables are in one location only. The current input structure is inefficient, inconsistent, and cumbersome to use because specific inputs must be changed in more than one file and typically are designed differently. As GTE indicated in its July 23, 1999 Comments, the format of the inputs in the FCC Model loop design module differs from the format in the other HAI-based modules.[6] For instance, pole material, labor, and spacing inputs are not separate inputs in the loop module. They are combined and included as an aerial structure placement cost per foot. In the switching module, however, these values are separate inputs. For consistency, the user must map pole structure inputs between the loop design and switching modules.

The use of a single input location within the FCC Model would decrease the potential for error. The ideal solution is to create either one input file that all modules use or ensure that a single input value is resident in only one input file.[7]

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[6] Universal Service Cost Model Docket, *Comments of GTE Corporation,* CC Docket Nos. 96-45, 97-160, (July 23, 1999) at p. 7.

[7] If this change is not made, ***each input file*** should indicate those inputs that must be changed in more than one location, and include the exact variable name(s) and file location(s) that must also be changed in order for the FCC Model to produce cost estimates that reflect the intentions of the user.

A large number of inputs are currently hard-coded in the modules (e.g., DLC sizes, general support allocators, per line common service support expense, and expense to investment ratios). Since many of these have a large impact on costs, they should be included in the input file and removed from the code. This would also result in more attention being devoted to inputs that have a large bearing on costs.

Many inputs that currently appear to be user adjustable are, in fact, not so. Some examples are the cost of capital, alternative switching factor, and the alternative circuit equipment factor. Any changes made in these inputs are overridden by other hard coded inputs.

Thus, a large change in the cost of capital results in little or no change in costs estimated by the FCC Model because the variable in the input table is not used in the cost calculation. Instead, the FCC Model uses the hard-coded cost of capital variable in the computer code. The problem appears to be in the expense modules, e.g., RFCC_expense_density_527.xls. For example, in the CCCFactor Worksheet of RFCC_expense_density_527.xls module, the calculation of the "Levelized Cost of Capital" for every network element except land is a function of the CCCFact Table (rows 3 to 9 and columns A to CD). This table has fixed inputs that are not effected by changing the cost of capital inputs. The values in this table correspond to the CCCFact in the HAI 5.0a Model, which is based on a cost of capital of 10.01%, not the FCC recommended value of 11.25%. The RFCC_expense_wirecenter_527.xls module has similar problems.

Instead of having fixed values in cell array B3:CD9, the appropriate formula linked to the cost of capital should be inserted. Not correcting this problem will understate the USF funding because the cost of capital is fixed at 10.01%.

The feeder placement allocator for cooper and fiber placement investment should not be part of the inputs because the deployment of fiber or cooper technology is a decision endogenous to the FCC Model. Instead, the FCC Model should be made to calculate the feeder structure investments based on the quantities of the fiber and cooper feeders modeled in a cluster.

3. The FCC Model Inputs Location Database Must Be Updated To Reflect The Most Recent, Available Data.

The FCC Model inputs must be updated to reflect the most recent and available data (1998 data) instead of the 1996 vintage data. The continued use of 1996 ARMIS access lines and expense levels ignores the costs associated with recent changes in access lines and expenses. In addition to the ARMIS data, household and business location counts must be current if the universal service fund is to be sized correctly. The FCC Model uses households to reflect the primary residential lines used to calculate universal service support levels. Therefore, failure to adjust locations when lines are updated will likely produce an insufficient fund size. Omitting these additional lines affects the reasonableness of every FCC Model result because the clusters generated by the FCC Model using 1996 line counts will not resemble clusters that would be generated using 1998 data. Updating lines without updating households and business locations

would increase the lines per location and understate the increase in total costs. Dividing by total lines would further understate cost per line.

4. The Failure To Document All Changes Made To The FCC Model Precludes A Complete Analysis.

The "history.doc" document in the FCC Model purports to list chronologically the various changes made in the FCC Model. The identification of these changes is necessary to examine and understand the modifications made in each version of the FCC Model. However, this detailed information is only provided for the loop module. For the switching and expense modules of the FCC Model, the "history.doc" file generally states that new HAI files have been added, but does not explain what changes are contained in the new files. As a result, it is impossible to pinpoint any changes made in these files. Analysis of the equations in these files reveals a number of changes from one version to the next; but, since these files have numerous equations, one can never be sure whether all of them have been found. In addition, the rationale for many of these changes is never explained. Unless each of the changes made to the FCC Model are documented upon each new model release, interested parties cannot meaningfully analyze the platform or fully evaluate proposed input values.

5. Platform Changes That Were Corrected In The FCC Model And Later Reversed Must Be Corrected Once Again.

Many of the platform corrections that GTE suggested in its February 12, 1999, *ex parte* filing were incorporated in the April 6, 1999, version of the FCC Model. GTE has now determined that the version of the FCC Model released on

June 2, 1999, reversed many of these changes and thereby reflects a flawed earlier version.

It appears that the corrections reversed in the June 2 FCC Model generally were those that tended to increase costs. A summary list of GTE suggestions that were incorporated into intermediate versions of the FCC Model (but then recently removed) is included in GTE Attachment 2. The details of these changes are included in GTE Attachment 3.

SPECIFIC PLATFORM ISSUES

1. The FCC Model Uses The Material Cost Of An SAI That Is One Size Smaller Than Required.

The Pascal documentation, "tech.pas" dated April 16, 1999, at lines 121 to 131 contain the sizing logic for the cross-connect box. Specifically, lines 129 through 131 identify how the FCC Model selects the SAI size from the list of input values.

```
129     for n := 1 to NumXCBoxSizes do
130     if l26 >= IntfcCost[n]^.NumLines
131     then tmp3 := IntfcCost[n]^.cost;
```

Once the FCC Model determines the number of pairs that will terminate in the SAI, l26, it picks from an input list of SAIs, sized from 7,200 to 1. It is clear from the FNPRM's Appendix D, that the size of each SAI input is the maximum number of pairs that can be terminated in that SAI. The FCC Model, however, is treating the size as if it were the minimum number of pairs to be terminated in the SAI.

Correction: Line 131 should be changed to select the next largest SAI in the list as the FCC Model goes down from the largest to the smallest until the required number of pairs exceeds the size of the listed SAI. This line should read:

then tmp3 := IntfcCost[n-1]^.cost

2. The FCC Model Line-Limit Constraint Does Not Work As Intended And Results In Inadequate SAI Capacity For Those Clusters That Exceed The Line-Limit Constraint.

If the line-limit input still provides a useful function, that function must be clearly identified and the FCC Model must be corrected so this feature works. For GTE's non-rural serving areas, the line-limit is exceeded in almost 3% of all clusters. AT&T and MCI argue that GTE is mistaken in its concern that the line-limit constraint is exceeded, claiming that "such a result is inevitable because a single business location, standing alone, may have more than 1,800 lines. Both the HAI and the FCC Model properly engineer such a business location as a single cluster served by multiple cables or digital loop carrier remote terminals as necessary to provision all of the required lines."[8]

Although this argument seems plausible on the surface, there is no indication in the FCC Model results or code that the FCC Model operates in the manner suggested by AT&T and MCI. The complete absence of an input value that identifies how many multi-line business locations exist by cluster makes it impossible for the FCC Model to take this factor into consideration in the development of clusters and the number of lines placed in each cluster. This

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[8] Universal Service Cost Model Docket, *Reply Comments of AT&T Corp. and MCI WorldCom, Inc.,* (August 6, 1999) at p. 2, fn 2.

information may exist somewhere in the PNR preprocessing stage, but this data are not evident in the PNR data GTE has reviewed.

The results from the FCC Model, however, show that taking into account multi-line businesses still produces clusters with more than 1,800 lines. Results for GTE's non-rural service areas show that of the 991 clusters with greater than 1,800 lines, 16% of these clusters would still have greater than 1,800 residential and single-line business lines after multi-line business lines were excluded. Also, there are 41 occurrences where no multi-line business lines exist and the lines in the cluster exceed 1,800 lines. Finally, there are no clusters in GTE's serving areas that include only multi-line business lines. Therefore, the argument put forth by AT&T and MCI is incorrect. The line-limit constraint is not functioning correctly.

The line-limit constraint is not functioning correctly because the line count adjustments should be carried out before the clustering process starts. This would ensure that the formed clusters would remain feasible. After the clusters have been created, the line-limit input may be violated when the true-up in line counts occurs. This needed adjustment must be performed at the right time – before clustering. Adjusting this after the clustering can invalidate initially feasible clusters. Evidence of this is found in the FCC Model runs, where there are non-core clusters that exceed the 1,800 line-limit.

One by-product of exceeding the line-limit is inadequate SAI capacity for clusters requiring more than a 7,200 line SAI. The undersizing of SAI capacity in these cases can be attributed to either 1) the FCC Model not placing multiple

SAI's in a cluster, or 2) lines in a cluster exceeding the line-limit, thereby exceeding the SAI's capacity. This understates investment only for the high density clusters, thereby invalidating the FCC Model's utility as a tool to determine relative costs by density.

3. The FCC Model's Adjustment Of Fractional Lines Together With An Artificial Re-Shaping And Re-Arranging Of Lots Leads To Underestimation Of Distribution Costs.

Although PNR data should include only locations that have phone service, its current location data can contain a large number of locations that have less than one line. This unusual outcome shows the importance of validating the PNR data before they are used.

As explained below, the FCC Model's current adjustment methodology for this fractional line problem, together with its re-shaping and re-arrangement of the lots within a cluster (which will be analyzed separately), artificially shrinks the actual serving areas (microgrids) in a cluster and, therefore, leads to underestimated distribution costs.

The current version of the FCC Model adjusts the fractional lines in a cluster by re-assigning the fractional lines randomly throughout all the micro-grids that have positive lines in the cluster. As a result, some micro-grids that originally contain fractional lines no longer contain any lines or lots after the adjustment, and fewer micro-grids would need distribution plant than before the adjustment.

Since the adjustment causes more lines to be located in fewer micro-grids, the average cable sizes for the distribution plant increases. This causes the FCC

Model artificially to pick up non-existent scale economies of larger cables, and dramatically reduce the number of required drop terminals. This adjustment further underestimates distribution costs.

4. The Proposed Corrections To The Flawed Line Count Adjustments Addressed In Issues 2 And 3 Above are Detailed Below.

Since the customer location data should include residential and business locations that have telephone service, each location should have at least one line. In addition, since each serving area or cluster can only serve a limited number of lines, the line count adjustments should be carried out before the clustering process begins to make sure that the formed clusters remain feasible.

Correction: Based on the above consideration, the line adjustments should be carried out in sub-Rasterization before clustering takes place. The details are provided below:

A) Instead of adjusting only the current Single Line Businesses ("SLB") as they exist currently in the code, adjust all locations (residential and/or business) that currently contain only partial lines to contain one line.

B) Adjust the lines in locations that contain more than one line so that, at the wire center level, the total residential lines and business lines match the database line count file. If needed, repeat A) and B) until the difference in the line counts is smaller than some predetermined number, i.e., three lines.

C) Drop the adjustment in "clusinf.pas" that guarantees that at the wire center level the total residential and business lines are at least the same as the number of their respective locations. That has been achieved by step A).

D) Move the partial line adjustment in "clusinf.pas" here. The whole lines from partial lines will be randomly distributed to all locations with at least one line per residential and business location.

E) The SLB adjustment is currently based on the false assumption that the number of SLB is equal the number of locations with only one business line. Multiple SLBs can be located in one business location. This should be corrected to allow for multiple SLB's per location.

Prior to making these adjustments, location data must be the most current and accurate data available.

5. The FCC Model Distorts Feeder Distance And Feeder Costs For Individual Clusters.

Feeder and material placement costs and feeder distances for clusters are determined in the FCC Model by multiplying the specific costs and distances for the Census Block Group ("CBG") times a Feeder Allocation Factor.[9] This factor appears to be the lines in the cluster times the feeder distance divided by the sum of the lines in each cluster times the feeder distance for each cluster in the CBG. Interestingly, the FCC Model documentation states that the use of this allocation factor in determining feeder costs and distances is not the most

[9] Pascal Logic Printout.pas.

appropriate approach.[10] Inexplicably, the FCC Model still uses this factor, instead of basing the feeder structure investments on the quantities of fiber and cooper feeder modeled in a cluster.

6. An Error In The FCC Model Causes The Total Tandem Digital Cross-Connect System ("DCS"), Total Operator Service ("OS") Tandem Add-Drop Multiplexer ("ADM") Investment, And Total OS Tandem Investment To Be Overstated.

The "total tandem DS3" and "total operator DS3" calculations incorrectly include the number of trunk groups per DS3 rather than the number of trunks per DS3. As a result, the denominators of the equations are understated, which causes the FCC Model to overstate the DCS investment actually required. In the tandem and STP investment worksheet of the switching module (RFCC_switching_io_805a.xls and previous versions), the tandem and operator DS3 calculations (cells D10 and H9) are incorrectly determined by dividing the CCS by 28 rather than 672.

The incorrect code is listed below, followed by the corrected code.

In the tandem and STP investment worksheet of the switching module, change cell D3 (total tandem DS-3s)

Incorrect Code: =D8/trk_occ/28

Correct Code: =D8/trk_occ/672

In the tandem and STP investment worksheet of the switching module, change cell H9 (total operator DS-3s)

Incorrect Code: =H8/trk_occ/28

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[10] Design History of Model, History.doc (December 17, 1998) at p. 2.

Correct Code: =H8/trk_occ/672

These errors will overstate some DS3 requirements and thereby overstate universal service support amounts.

7. The Number Of High Density DLCs In The FCC Model Appears To Be Incorrect.

The number of High Density DLCs appears to be incorrect because the number of 2,016 line unit terminals is multiplied by a factor of three for no apparent reason. Similarly, the number of 1,344 line unit terminals is multiplied by a factor of two. The FCC Model documentation offers no explanation for this apparently arbitrary multiplication. This methodology must be explained for the FCC Model to be meaningfully evaluated.

The Pascal documentation, "printout.pas" dated April 20, 1999, is a file in "Pas_src.zip" dated June 1, 1999. This zip file was included in "install.zip" dated June 2, 1999. Lines 273 to 274 of "printout.pas" state:

> "{number of TR-303s)} SA_array^[i]^.n2016*3 +SA_array^[i]^.n1344*2 +SA_array^[i]^.n672 +SA_array^[i]^.n96+SA_array^[i]^.n24,',',".

These lines calculate the number of TR-303 RT's for column AC of the output file "DISTGRID.CSV". This CSV file feeds the "distribution output by cluster" worksheet in workfile generated by the FCC Model. The value can be found in column AC and is called "number of high-density RTs."

Correction: Lines 273 to 274 of "printout.pas" should state:

> "{number of TR-303s)} SA_array^[i]^.n2016 +SA_array^[i]^.n1344 +SA_array^[i]^.n672 +SA_array^[i]^.n96+SA_array^[i]^.n24,',',".

This error does not appear to cause any quantifiable miscalculation in the outputs; however, it does limit the ability to determine the average investment for a DLC Remote Terminal.

8. The FCC Model's Residence Line-To-Household Ratio Is Distorted.

The FCC Model trues up residence lines, but not households. As a result, the residence line-to-household ratio is distorted. For instance, for individual clusters in GTE North-Pennsylvania, the ratio ranges from .78 to 1.15. This causes the FCC Model to produce more households than residence lines in the three largest density zones and, as a consequence, incorrect funding levels. This mismatch between residence lines and households further distorts the reasonableness of the results by generating an inaccurate relationship between primary and secondary lines, and results in an incorrect fund size. This issue also applies to business lines and locations.

9. The FCC Model Disregards The Actual Locations Of Residential And Business Lines When It Reshapes The Lots And Rearranges Them To Minimize The Number Of Unused Lots Thereby Producing Reduced Distribution Cost Estimates.

Before engineering the network to serve locations within a micro-grid, the FCC Model currently uses the "lotdiv.pas" routine, which reshapes the lots of the residential and business locations and rearranges them to minimize the number of unused lots. This routine essentially moves residential and business locations around so that they are artificially clustered to reduce engineering requirements. By disregarding the actual locations of residential and business lines, these

artificially compact micro-grids create artificial economies of scale relating to drop terminals. In other words, the FCC Model creates artificial economies of scale for drop terminals in an effort to minimize the number of unused lots by arbitrarily reshaping and rearranging lots.

Furthermore, the FCC Model provides one NID and one drop per lot without regard to the number of lines in the lot. The FCC Model input allows only one combined input price for the drop and NID. Therefore, the FCC Model would produce the cost for the NID and drop regardless of the number of lines serving the lot. Similarly, the FCC Model provides a drop terminal for up to four lots without considering the maximum capacity of drop terminals. The FCC Model currently provides one price for all drop terminals that serve at least 25 pairs. These problems have to be fixed before the FCC Model can produce a reasonable USF cost estimate.

To avoid creating artificial economies of scale in the modeling process, the "lotdiv.pas" procedure should be eliminated. Moving houses and business around to reduce the engineering requirements and thus the costs is methodologically inappropriate.

10. The FCC Model's Switching Investment Calculations Are Flawed.

There are three types of errors in the FCC Model's switching investment calculations. The first is the inconsistent use of lines in the sizing of switches and in the calculation of per-line investment for the standalone switches. The second is the inconsistent use of line counts in the host and remote switching investment

calculation. The third is the arbitrary reduction of trunk investment in the end offices.

For the first type of errors, the FCC Model uses only switched lines to size the total required switched investment for standalone switches, but then uses total lines including both the switched and special access lines, to produce the per line investment. As a result, the per-line switch investment is underestimated.

The affected formula is reproduced below:

RFCC_switching_io_527.xls, wire center investment!BU2:
=IF(C2=0,0,IF(sw_type="A",1/C2*VLOOKUP(F2/B2/line_fill,sw_inv_tbl,IF(OR(BY2=8,BY2=1),2,8))+VLOOKUP(F2/B2/line_fill,sw_inv_tbl,IF(OR(BY2=8,BY2=1),5,11))-inputs!$C$37/6-inputs!$C$24*(BE2)/'loop db inputs'!D2+(Z2*inputs!$C$97/2+C2/F2*inputs!$C$37*(L2*2+O2+R2+AC2+AF2+AI2*2+AL2)),IF(AND(sw_type="H",B2>1),1/C2*VLOOKUP(F2*(1-1/B2)/B2/line_fill,sw_inv_tbl,IF(OR(BY2=8,BY2=1),2,8))+VLOOKUP(F2*(1-1/B2)/B2/line_fill,sw_inv_tbl,IF(OR(BY2=8,BY2=1),5,11))-inputs!$C$37/6-inputs!$C$24*(BE2)/'loop db inputs'!D2+(Z2*inputs!$C$97/2+C2/F2*inputs!$C$37*(L2*2+O2+R2+AC2+AF2+AI2*2+AL2)),0)))*sw_install_mult

Note that in the above formula, the line sizes used to determine switching investment is based on Cell F2, which is only "Total Switched lines," but the investment is divided into Cell C2, which is "Total lines," and includes "Total Switched lines" and special access lines. As a result, the per-line switching investment is always underestimated.

For the second type of error, the line counts used to pick up the fixed portion of switch investment for hosts and remotes are the total number of switched lines without adjustments for fill factors. However, the line counts for the selection of per-line portion of the switch investments are those after fill

factors are applied. To be consistent, the line counts used to select the fixed portion of switch investments should be adjusted with the fill factors.

The affected formulae are as follows:

host-remote!P2: Switch investment per host
=IF($A2<>$A1,VLOOKUP($W2,sw_inv_tbl,IF(OR('loop db inputs'!$B$2=8,'loop db inputs'!$B$2=1),3,9))+D2/line_fill*VLOOKUP($W2,sw_inv_tbl,IF(OR('loop db inputs'!$B$2=8,'loop db inputs'!$B$2=1),6,12))-W2/6*inputs!$C$37+AL2*inputs!$C$37+AQ2*inputs!$C$97/2-Z2*inputs!$C$24,0)*sw_install_mult
host-remote!R2: Switch investment per remote
=(VLOOKUP($J2,sw_inv_tbl,IF(OR('loop db inputs'!$B$2=8,'loop db inputs'!$B$2=1),4,10))+J2/line_fill*VLOOKUP($J2,sw_inv_tbl,IF(OR('loop db inputs'!$B$2=8,'loop db inputs'!$B$2=1),7,13))-AA2*inputs!$C$24)*sw_install_mult

For the third type of error, the trunk investments in the end offices are artificially reduced. Although the Commission has concluded "that the switch module should be modified to disable the computation that reduces the end office investment by the difference in the interoffice trunks and the 6:1 line-to-trunk ratio,"[11] the latest version of the FCC Model does not contain this correction. As a result, the current FCC Model continues to underestimate the switching investment. The correction can be carried out or the reduction can be disabled by removing both the trunk cost reduction calculation and the separate calculation of trunk costs from all end office switching calculations.

[11]FNPRM at ¶187.

11. BLR Wire Center Boundaries Do Not Accurately Reflect Wire Center Serving Areas.

The BLR wire center boundary produces an inaccurate approximation of actual wire center serving areas. For example, when examining default runs of the FCC Model for GTE's Oregon serving areas, the PNR data for the Turner Central office, based on BLR, place all office lines within a rectilinear distance of about 25 KFT of the central office. However, when using GTE actual wire center data, there are more than 400 lines that are located beyond 25 KFT, with some as far as 50 KFT from the wire center. This means that the actual wire center serving area for Turner can be more than four times the size of what is reported in BLR data. The FCC Model trues up lines in a wire center. Without any corrections in the wire center boundary, the FCC Model would create an artificially concentrated wire center. This would result in non-existent economies of scale and artificially reduce the need for DLC lines, thereby underestimating costs.

12. The FCC Model Does Not Accurately Calculate Sufficient Transport Facilities To Support The Traffic Generated By The Lines Terminated On The Switch.

The interoffice facilities and tandem switching portion of the FCC Model's network reflects some total company level DEM and usage data. This is not enough. The interoffice facilities and tandem switching portion of the network must also respond to the traffic demands of the interexchange carriers ("IXCs") and new LECs. These carrier specific demands for switched access facilities

and direct trunk groups reflect carrier forecasts, other IXC considerations, and a marketplace with a continually increasing number of carriers. The theoretical traffic engineering assumptions used in the FCC Model's development of interoffice and tandem network elements ignores these real world demands. This error results in a gross understatement of interoffice transport investments.

In a number of state jurisdictions, AT&T has conceded that the 5:1 to 6:1 line-to-trunk ratio is accurate and reflects current network characteristics.[12]

Currently, the Model starts with 1996 company level usage data and uses theoretical traffic engineering design criteria. GTE recommends that the interoffice facilities and tandem network design use the most current actual access trunk facilities demands of the IXCs [reported to the FCC plus intra-Lata facilities] and the total trunk ports contained in the local switching investment amounts. If needed, the ILECs can provide additional data to allocate the facilities among the numerous types of interoffice facilities required in the network.

Conclusion

GTE respectfully suggests that the Commission's decision on inputs must be deferred until the foregoing platform flaws, as well as those previously identified by GTE, have been corrected and the FCC model platform is stable and complies with the Commission's 10 cost model criteria. Absent a corrected

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[12] *See* Before the Public Utilities Commission of the State of California, Docket R 93-04-003, I 93-04-002, *Transcript of Deposition of Robert A. Mercer*, at p. 438, line 13, (March 8, 1997); Before the Missouri Public Service Commission, Docket No. TO-98-329, *AT&T's Responses to GTE's First Set of Data Requests Requests,* Nos. 5, 10.

and compliant platform and properly developed inputs, the Commission is without a mechanism capable of producing a sufficient and predictable universal service fund.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Rulemaking on the Commission's Own Motion to Govern Open Access to Bottleneck Services and Establish a Framework for Network Architecture Development of Dominant Carrier Networks	R. 93-04-003
Investigation on the Commission's Own Motion into Open Access and Network Architecture Development of Dominant Carrier Networks	I. 93-04-002

RESPONSE OF AT&T COMMUNICATIONS OF CALIFORNIA, INC. (U 5002 C) AND MCI TELECOMMUNICATIONS CORP. (U 5011 C) TO MOTION OF GTE CALIFORNIA INCORPORATED (U 1002 C) FOR EXTENSION OF TIME TO FILE TELRIC UNBUNDLED NETWORK ELEMENT COST STUDIES

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July 24, 1997

I. INTRODUCTION

AT&T Communications of California, Inc. ("AT&T") and MCI Telecommunications Corp. ("MCI") submit this response conditionally supporting GTE California Incorporated's ("GTEC's") motion requesting an extension of time to file its TELRIC unbundled network element ("UNE") cost studies. AT&T and MCI support GTEC's request so long as:

1. AT&T and MCI may present their own economic cost analysis, including the Hatfield cost model and their cost analysis for Operations Support Systems and non-recurring costs, at the same time as GTEC presents theirs.
2. GTEC's cost analysis for non-recurring costs must conform with the principles for a forward-looking, most efficient technology available, long-run incremental cost analysis found in the consensus costing principles attached to Decision ("D.") 95-12-016.
3. GTEC must provide the parties with any models, or model modules, that are "completed" before the filing date. These include electronic versions of models, including their input and output files, such as the SCIS or COSTMOD.
4. GTEC must provide "intermediate" results for the items listed in Appendix A to this response when it provides its cost studies.
5. Pacific Bell ("Pacific") should be on notice that GTEC, AT&T and MCI will file their cost analysis of Operations Support Systems and non-recurring costs. Pacific should do the same or risk the non-recurring cost portion of the case moving forward without Pacific's cost analysis.

AT&T and MCI believe that, if GTEC takes this additional time to more thoroughly document its cost analysis and meet these conditions, this will significantly enhance the quality of the review of the cost analyses, as well as shorten the time necessary to complete the review. The California Public Utilities Commission ("Commission") will benefit with a more directed and complete analysis of the cost studies at issue.

II. GTEC, AT&T AND MCI SHOULD FILE THEIR COST ANALYSES CONCURRENTLY.

It is a simple matter of fairness that the Commission should allow AT&T and MCI the same additional time to prepare their cost analyses as the Commission may grant GTEC. GTEC's point that this additional time will allow them to more thoroughly document their entire study, and ensure that the non-recurring cost analysis is consistent with the remainder of their analysis, is well taken. AT&T and MCI will also take this additional time to further develop and document their cost analysis. AT&T and MCI will provide the Commission not only with the Hatfield Model but also with a forward-looking, most efficient technology, long-run incremental cost analysis of Operations Support Systems and the associated non-recurring functions.

This latter set of cost studies, *i.e.*, those for Operations Support Systems and the associated non-recurring functions, are a sorely absent feature of the OANAD proceeding. The Commission should applaud GTEC's commitment to produce such studies by September 15, 1997. AT&T and MCI make a similar commitment to produce such studies on that same date.

III. GTEC's COST ANALYSIS SHOULD CONFORM TO THE "CONSENSUS COSTING PRINCIPLES."

The Commission, in granting GTEC the extension they request, should make it clear that all the studies GTEC will produce on September 15, 1997, should comport with the consensus costing principles attached to D.95-12-016. Those principles outline the fundamental requirements of an economic analysis of the cost of providing services and UNEs. They remain the appropriate costing principles for all the bottoms-up cost analysis

necessary to set final monthly and non-recurring prices for UNEs and non-recurring charges.

As GTEC correctly points out in its motion, AT&T and MCI agree that this proceeding must set ". . .final prices for unbundled network elements (UNEs) as soon as possible." GTEC Motion p. 2. GTEC also correctly states that its new UNE cost studies should meet a "TELRIC" standard. GTEC Motion p. 1. In order to avoid any confusion concerning this cost standard, AT&T and MCI suggest that the Commission make it clear in granting GTEC's request that GTEC's studies, including its non-recurring cost study, must comply with the nine costing principles for a forward-looking, long-run, least-cost, incremental cost study set forth in Appendix C to D.95-12-016.

Because the Commission adopted this cost standard after a careful and exhaustive review of the need for a market-based cost standard to use in setting prices to open the local market to competition, this remains the appropriate cost standard for this proceeding. In D.95-12-016, the Commission stated that, "[f]n today's decision we adopt the principles that will govern the development of cost studies for the basic network functions (BNFs) [now referred to as UNEs] of the local exchange networks of Pacific Bell (Pacific) and GTE California Incorporated (GTEC)." D.95-12-016 p. 2. The Commission's reaffirming this standard will help avoid any possible argument over the correct cost standard for UNE analysis, and allow the Commission to move quickly to setting monthly and non-recurring "final" prices for UNEs and their associated non-recurring charges.

IV. GTE SHOULD PROVIDE ALL "COMPLETED" MODULES OR MODLES AS SOON AS THEY ARE COMPLETED.

Not all of GTEC's cost model is still in development, nor does all of it need further adjustment to accommodate the non-recurring cost analysis. For example, GTEC is using the Switching Cost Information System ("SCIS") to develop part of its switching cost estimate as well as the COSTMOD model. AT&T and MCI request that, to the extent these are off-the-shelf models that GTEC is not further developing for this proceeding, GTEC should provide as soon as possible the electronic versions of such models and their electronic input and output files. This will expedite review and not interfere with GTEC's further work on its cost analysis.

V. GTEC's COST MODELS MUST PROVIDE INTERMEDIATE RESULTS IF THE MODELS ARE TO RECEIVE A THORDUGH REVEIW.

During one of GTE's "workshops" on its model some parties asked if the model provided "intermediate" outputs. The response was that it did not. However Dr. Emmerson of INDETEC stated that they might be able to modify the model to provide such intermediate outputs if parties could provide a specific list of the outputs they sought. The ability to access intermediate outputs in GTEC's model is essential to understanding the flow of calculations through the model, and to suggesting changes that might improve the model.

Without access to those intermediate outputs, GTEC leaves the parties with the "black box" problem for completing their analysis, *i.e.*, they are left to arguments about the inputs without any real ability to challenge the process of calculation in the model. The near total lack of intermediate outputs in the GTE model will seriously hamper the

effort to analyze GTEC's model, and to compare the GTEC results with results of other models. For example, the new GTEC model does not produce even a total investment for loops prior to the addition of expenses, nor does the model produce total investment results for any of the sub-components of the loop. Therefore the parties will have little ability to analyze the discrete major components that make up loop costs, even for such critical components as total feeder and distribution cost or total cable costs as compared to electronics costs. Nor would they have the ability to analyze the cost in specific service areas to determine geographic variations.

In a letter of July 11, 1997, AT&T and MCI provided a list of the intermediate outputs they sought. AT&T and MCI request that the Commission, in granting GTEC's motion, direct GTEC to make every effort to provide all such intermediate outputs for their model, or, if that is not possible, that GTEC work with the parties to define a reasonable and mutually acceptable list of such intermediate outputs. AT&T and MCI have attached to this response the list of intermediate outputs they attached to their letter of July 11, 1997, to which GTEC has not yet responded.

VI. PACIFIC SHOULD BE ON NOTICE THAT IT MUST ALSO PRODUCE A FORWARD-LOOKING, LONG-RUN, LEAST-COST, INCREMENTAL ANALYSIS OF NON-RECURRING COST OR RISK THE COMMISSION USING AN ALTERNATIVE ANALYSIS.

Pacific is now the recalcitrant party in this proceeding. Pacific continues to be unwilling to commit to a specific date for producing a forward-looking, least-cost, long-run, incremental cost analysis of its non-recurring costs. GTEC, AT&T and MCI have all committed to providing their cost analysis by September 15, 1997. At that time AT&T and MCI will produce their cost analysis of both GTEC's and Pacific's operations. AT&T

and MCI request that the Commission put Pacific on notice that, should Pacific fail to produce such a cost analysis by that date, it risks having the Commission move forward on the establishment of final prices using an alternative to Pacific's cost analysis for non-recurring cost.

VII. CONCLUSION

For all the reasons stated above AT&T and MCI request that the Commission grant GTEC's request for an extension of time to file its entire cost analysis, subject to the conditions described above.

Respectfully Submitted

By: M P Hurst
Michael Hurst
Attorney for AT&T Communications of California, Inc.

July 24, 1997

Attachment A

INTERMEDIATE OUTPUT LIST

AT&T and MCI request that GTEC modify its cost model to provide the following intermediate output data. Although it is helpful to receive the data in hard copy form, we stress that the capabilities to print to files both the intermediate and final output, as well as to *view them on-screen* are essential to our ability to perform a comprehensive review of the ICM.

Loop Module

We request the following intermediate outputs for the module as a whole (for the GTE California service territory) or for the specified geographic areas:

(1) Density and loop length data by wire center by zones for the initial
   (a) 4x4 grid,
   (b) the next 8x8 ring, and
   (c) all grids outside the second ring;
(2) Total loop investment;
(3) Loop investment for feeder and distribution separately;
(4) By wire center, average cable sizes and total circuits in each segment;
(5) Total feeder and distribution fill (both overall and at the wire center and segment levels);
(6) Wire center totals; and
(7) Loop model outputs by facility type (total dollars for aerial, buried, UG, electronics, etc.)

On a grid-by-grid basis, please provide the following in a comma-delimited file (the apparent variable name is given in parenthesis). If the data can be written to separate data files for each wire center, please provide in that form:

(8) Grid cell identifier ("t_Grid");
(9) CLLI code ("CLLI");
(10) Outputs from the *aerial* distribution cable calculations within the procedure Cable_Analysis, which appear to include,
   (a) Number of aerial distribution cables (cable_cnt; for each discrete cable size),
   (b) Aerial distribution cable capacity, in wire pairs (CS; for each discrete cable size used),
   (c) Total aerial distribution cable feet (Aer_ft),
   (d) Total aerial distribution pair feet (pair_ft),
   (e) Total demand served by aerial distribution cables (dm_aer^[i], which is actually an input to the calculation),
   (f) Total investment in aerial distribution cable in the grid ("aerial_Inv"), and
   (g) Total pole investment in the grid ("poles_inv");
(11) The analogous outputs to item (10) for the *buried* distribution cable calculations;
(12) The analogous outputs to item (10) for the *underground* distribution cable calculations; and
(13) Distribution cable utilization rate within the grid ("util_rate").

We are also interested in obtaining intermediate output for the following loop module outputs; these items, however, are of lesser priority;

(14) Drop investments for residence and business lines in the grid ("RDrop_Inv", "Bdrop_Inv"), and

(15) NID investments ("RNID_Inv", "BNID_Inv").

Some (but not all) of the data above appear to be available in the table t_OSPDist. At a minimum, please modify ICM to allow this table to be written to a file. Also, please confirm that the data in question are presented at the grid level. Other data appear to be available in the table t_wirecenter. Again, at a minimum, please modify ICM to allow this table to be written to a file. Also, please confirm that the data in question are presented at the wirecenter level.

There is another table that ICM generates to hold feeder investment data on a per line basis, created by the procedure Create_ACC_Feeder_Table (see page 30 of algorithms). We would like to have the option of having ICM write the associated outputs to a data file. Currently, these appear to be limited to such items as CLLI, USoA account, dollar investments, and loops. The following feeder-related outputs also should be provided on a wire center basis, either via that table (written to a file) or by other means.

(16) For each feeder route, and separate for each placement type (underground, aerial, buried) please provide;

- (a) Feeder cable footage (feeder_length),
- (b) Number of feeder cables and type (fiber, copper),
- (c) Feeder cable capacities (strands or wire pairs),
- (d) Demand served,
- (e) Utilization rate,
- (f) Total cable investment, and
- (g) Total structure investment (poles, conduit).

Switching Module

Please provide the following intermediate outputs:

(17) All ICM output reports by technology (before technology weighting is applied);

(18) All switch module outputs by total cost per line (by total company, by wire center and by switch type); and

(19) At least one of the following two items,

- (a) Each output (*e.g.*,2-wire port, originating call set-up) and final element (port, MOU) results at investment level – before investment Adj (factor) is applied and before ExpFact is applied; and/or
- (b) Each output and element result at adjusted investment level (includes application of Adj factor, but before the ExpFact is applied;

Expense Module

(20) Please isolate the expense module from its investment inputs so that a reviewer can separately evaluate the ICM's treatment of investments from their conversion into recurring costs, *e.g.* how it treats $1 of investment of

given type. If necessary to accomplish this objective, please provide the expense module on a stand-alone basis.

(21) Please provide the total investment output for each UNE at the point it is handed off to the expense module.

(22) Please separately identify the amount of shared cost allocated to each service and to each unbundled network element. Show specifically how much of the shared cost was allocated based on activity-based analysis versus a "cost-causative" approach versus a "residual" approach.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a copy of Response of AT&T Communications of California, Inc. and MCI Telecommunications corp. to Motion of GTE California Incorporated for Extension of Time to File TELRIC Unbundled Network Element Cost Studies to all known parties to R.93-04-003/I.93-04-002 by mailing a properly addressed copy by first class-mail with postage prepaid to each party named in the official service list.

Executed on July 24, 1997 at San Francisco, California.

Katy M. Lindsay

GTE Ex Parte Issues

Attachment 2

Issue No	January 19 Version of Model	Proposal by GTE in Ex-parte on February 12.	MCI Ex-parte on March 5	April 6 Version of Model	June 2 Version of Model
15	**a).** Inconsistent calculation for SAI expenses: in the WC Module, SAI expenses are based on underground fiber expense-to-investment factor while in the DZ Module, SAI expenses are based on underground copper expense-to-investment factor. Not clear why would the "underground" factors be used for SAI expenses, especially in light of the fact the Model uses a composite of aerial, buried and underground cable lives for the SAI life.	A corrected formula using an expense factor based on a composite of all cable expenses was provided.	Accepted as valid.	Corrected as proposed. Resulted in higher cost.	Reversed to January 19. Cost decreased.
	b). Inconsistency in the calculation of underground feeder placement expense and capital costs: expense based on Conduit expense-to-investment factor, and capital costs on Underground Metallic & Non Metallic Cable life.	A corrected formula for underground feeder placement expense based on underground metallic and non metallic expenses was provided.	Accepted as valid.	Corrected in a different manner than suggested. Resulted in lower costs.	Correction retained.
	c). MDF/protector expense is based on the life of Digital Circuit Equipment.	It would be more appropriate to use a composite of outside plant and switch lives for the MDF/Protector life. A corrected formula based on that was provided.	Error accepted and MCI claimed that it was corrected in the ex-parte filed on February 26.	Corrected as proposed. Resulted in lower cost.	Reversed to January 19 version.
	d). Drop and terminal lives used are some inexplicably weighted average of aerial buried and underground cables, but not specific to the type of placement.	A revised formula for composite life was provided.	MCI claimed that it was changed in the ex-parte filed on February 26.	Could not be ascertained since only the result and not the calculation is shown.	Same as January 19 version. Impact of the changes on costs is uncertain.

GTE Ex Parte Issues

Issue No	January 19 Version of Model	Proposal by GTE in Ex-parte on February 12.	MCI Ex-parte on March 5	April 6 Version of Model	June 2 Version of Model
	f). Inconsistency in the allocation of local signaling costs: in WC Module it is based on actual MOUs while DZ Module based on calculated MOUs.	The changes suggested were explained.	Error accepted and MCI claimed that it was corrected in the ex-parte filed on February 26.	No Change. Likely impact of the changes on costs is uncertain.	No Change.
	g). In WC Module, feeder underground costs fail to take into account the structure sharing.	A corrected formula was provided.	Accepted.	Corrected as proposed. Resulted in lower cost.	Correction retained.
	h). In WC Module, distribution underground conduit cost fails to take into account the structure sharing.	A corrected formula was provided.	Accepted.	Corrected as proposed. Resulted in lower cost.	Correction retained.
	i). The average non-metallic cable life is calculated using aerial, buried and underground non-metallic cable investment and lives. But, in WC Module, only aerial investment for zone 850-2550 is used instead of investments for all density zones.	A corrected formula was provided.	MCI claimed that it was changed in the ex-parte filed on February 26.	No correction	Corrected as proposed. Likely impact of the changes on costs is uncertain.
	j). EO Wire Center land capital costs are overstated due to use of incorrect equity fraction leading to overstating the taxable equity portion of return.	A corrected formula was provided.	MCI claimed that it was changed in the ex-parte filed on February 26.	Corrected. Resulted in lower cost.	Reversed to January 19 version.
	k). In the Wire Center expense module, the USF costs do not include the local portion of tandem switch costs while they are correctly included in the Density Zone expense module.	A corrected formula was provided.	Accepted as valid	Corrected as proposed. Resulted in higher cost.	Reversed to January 19 version

GTE Ex Parte Issues

Attachment 2

Issue No	January 19 Version of Model	Proposal by GTE in Ex-parte on February 12.	MCI Ex-parte on March 5	April 6 Version of Model	June 2 Version of Model
16	The Wire Center Expense Module arbitrarily applies the sharing percentage of density zone 650-850 to the entire wire center, ignoring density zone specific sharing information.	An explanation of the needed changes was provided.	MCI claimed that it was changed in the ex-parte filed on February 26.	Corrected as proposed. Likely impact of the changes on costs is uncertain.	Correction retained.

GTE Ex Parte Issues in the Expense Module

In a previous ex parte dated February 12, 1999, GTE pointed out a number of inconsistencies and errors in the expense modules. Most of the suggested corrections were incorporated in a subsequent version of the model released on April 6, 1999. However, an examination of the most recent version of the model released, on June 2, 1999, reveals that many of those changes have now been reversed and the earlier incorrect formulae have been restored. No explanation is provided for this change in the current version of the model.

There is also a troubling aspect to these changes. In the ex parte filings GTE pointed out all inconsistencies and errors in the model regardless of whether correcting them would increase or decrease costs. In the current version, a large number of changes made in the April 6 version that increased costs have been reversed in the current version while most of those changes that reduced costs have been retained.

This chart illustrates the actions taken by the FCC in response to GTE's Ex Parte.

	Presumed Impact		
	Decreased Cost	Increased Cost	Uncertain
Ignored	15f		15d
Corrected and Retained	15b, g, h		15i, 16
Corrected then Reversed	15c, j	15a, k	

The following examples are instances where changes made per GTE's suggestions that increased costs were incorporated in an intermediate version and have now been reversed.

Issue No. 15a). SAI (Same Issue as Attachment M1 of February 12, 1999, Ex Parte)

Among various cable types, the expense to investment ratio is the smallest for underground cable. For the SAI expense costs, the model initially used the underground copper cable factor although the life of an SAI was based on a composite of actual aerial, buried and underground copper cables. The calculations were changed in the April 6 version, per GTE comments, to use a composite of actual aerial, buried and underground copper cables for the expense to investment ratio. However, the version released on June 2 has again gone back to the earlier and lower underground copper cable expense to investment ratio.

January 19, 1999, Version:

Cell CV3 of the Investment Input Tab in the Wire Center expense module

=(AG3*((1-(Inputs!$K$25-TRUNC(Inputs!$K$25)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$25))+(Inputs!$K$25-TRUNC(Inputs!$K$25))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$25))))+(AG3*'96 Actuals'!$I$45)

Suggested Change in GTE ex parte

Proposed Formula=(AG3*((1-(Inputs!$K$25-TRUNC(Inputs!$K$25)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$25))+(Inputs!$K$25-TRUNC(Inputs!$K$25))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$25))))+(AG3*((('96 Actuals'!$I$44) * (SUM('Investment Input'!K:K)+SUM('Investment Input'!X:X))) +(('96 Actuals'!$I$45) * (SUM('Investment Input'!I:I)+SUM('Investment Input'!V:V))) +(('96 Actuals'!$I$46) *(SUM('Investment Input'!J:J)+SUM('Investment Input'!W:W))))/(SUM('Investment Input'!K:K)+SUM('Investment Input'!X:X)+SUM('Investment Input'!I:I)+SUM('Investment Input'!V:V)+SUM('Investment Input'!J:J)+SUM('Investment Input'!W:W)))

Where:

AG3 = SAI investment (pasted from loop module)

Inputs!$K$25 = Adjusted projection life (years) for NID & SAI

CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab

'96 Actuals'!$I$45 = Alternative Cable Maintenance Factor for Copper Underground Cable

'96 Actuals'!$I$44 = Alternative Cable Maintenance Factor for Copper Aerial Cable

'96 Actuals'!$I$46 = Alternative Cable Maintenance Factor for Copper Buried Cable

'Investment Input'!K = copper feeder cable aerial Investment

'Investment Input'!X = Distribution cable aerial Investment

'Investment Input'!J = copper feeder cable buried Investment

'Investment Input'!W = Distribution cable buried Investment

'Investment Input'!I = copper feeder cable underground Investment

'Investment Input'!V = Distribution cable underground Investment

April 6, 1999, Version

=AG3*(INDEX(KACF,13))+(AG3*((('96 Actuals'!$I$44)*(SUM('Investment Input'!K:K)+SUM('Investment Input'!X:X)))+(('96 Actuals'!$I$45)*(SUM('Investment Input'!I:I)+SUM('Investment Input'!V:V)))+(('96 Actuals'!$I$46)*(SUM('Investment Input'!J:J)+SUM('Investment Input'!W:W))))/(SUM('Investment Input'!K:K)+SUM('Investment

Input'!X:X)+SUM('Investment Input'!I:I)+SUM('Investment Input'!V:V)+SUM('Investment Input'!J:J)+SUM('Investment Input'!W:W)))

June 2, 1999, Version

=(AG3*((1-(Inputs!$K$25-TRUNC(Inputs!$K$25)))*INDEX(CCCFact,Inputs!$N$25,TRUNC(Inputs!$K$25))+(Inputs!$K$25-TRUNC(Inputs!$K$25))*INDEX(CCCFact,Inputs!$N$25,1+TRUNC(Inputs!$K$25)))+(AG3*'96 Actuals'!$I$45)

Issue No. 15k). Tandem Switch (Same Issue as Attachment S of February 12, 1999, Ex Parte)

GTE pointed out that the USF costs did not include the local portion of the tandem switch costs. These were corrected as suggested in the April 6 version but have again been reversed in the June 2 version.

January 19 Version
Cell HR3 of the Investment Input Tab in the Wire Center expense module
=IF(B3="",0,((((((HG3+HH3)*Inputs!$F$102)+((HI3+HJ3)*Inputs!$C$85)))/GD3/(Summary!$C$3+Summary!$D$3+Summary!$F$3)/12)*((1-'96 Actuals'!$F$142)/(1-'96 Actuals'!$F$141))))

Suggested Change in GTE ex parte
Proposed Formula =
IF(B3="",0,((((((HG3+HH3)*Inputs!$F$102)+((HI3+HJ3)*Inputs!$C$85)+(HK3*Inputs!$C$108)))/GD3/(Summary!$C$3+Summary!$D$3+Summary!$F$3)/12)*((1-'96 Actuals'!$F$142)/(1-'96 Actuals'!$F$141))))

Where:
B3 = Total lines
HG3 = Direct Transport Unit Cost per minute
HH3 = Direct Transmisssion Unit Cost
HI3 = Common Transport Unit Cost per minute per leg
HJ3 = Common Transmission Unit Cost per minute
HK3 = Tandem Switching Unit Cost
Inputs!$F$102 = Local Direct Transport MOU
Inputs!$C$85 = Local Common Transport MOU
Inputs!$C$108 = Local Tandem Switch MOU
Summary!$C$3 = business lines
Summary!$D$3 = residential lines
Summary!$F$3 = public lines
'96 Actuals'!$F$142 = Wholesale factor
'96 Actuals'!$F$141 = Uncollectible factor

April 6 Version

=IF(B3="",0,((((((HN3+HO3)*Inputs!$F$102)+((HP3+HQ3)*Inputs!$C$85)+(HR3*Inputs!$C$108)))/GK3/(Summary!$C$3+Summary!$D$3+Summary!$F$3)/12)*((1-'96 Actuals'!$F$142)/(1-'96 Actuals'!$F$141))))

June 2 Version

=IF(B3="",0,((((((HN3+HO3)*Inputs!$F$102)+((HP3+HQ3)*Inputs!$C$85)))/GK3/(Summary!$C$3+Summary!$D$3+Summary!$F$3)/12)*((1-'96 Actuals'!$F$142)/(1-'96 Actuals'!$F$141))))

The following examples are instances where changes made per GTE's suggestions that lowered costs that were corrected and retained in the current version of the model.

Issue No. 15b). U/G Structure (Same Issue as Attachment M2 of February 12, 1999, Ex Parte)

Initially the model calculated U/G placement capital costs based on cable lives while the expense portion of U/G placement was based on the expense factor for conduits. For consistency, GTE suggested that the expense factor should also be based on the cable expense factor rather than the expense factor for conduits. These changes were incorporated in the April 6 version and resulted in higher costs. In the current version, the calculations have been made consistent but changed the U/G placement capital costs to one based on conduit lives while retaining the earlier expense factor for conduits. As a result, the costs have been lowered from the original version since conduit lives are usually longer than cable lives and result in lower costs.

January 19, 1999:
Cell DF3 of the Investment Input Tab in the Wire Center expense module.
=((I3+(Q3*Inputs!$G$70))*((1-(Inputs!$K$29-TRUNC(Inputs!$K$29)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$29))+(Inputs!$K$29-TRUNC(Inputs!$K$29))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$29))))

January 19, 1999:
Cell DH3 of the Investment Input Tab in the Wire Center expense module.
=(O3*((1-(Inputs!$K$35-TRUNC(Inputs!$K$35)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$35))+(Inputs!$K$35-TRUNC(Inputs!$K$35))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$35))))+((O3+Q3+R3)*'96 Actuals'!$F$51)

Suggested Change in GTE ex parte
Proposed Formula=(O3*((1-(Inputs!$K$35-
TRUNC(Inputs!$K$35)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$35))+(Inputs!K
35-
TRUNC(Inputs!$K$35))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$35))))+((O3*'96
Actuals'!$F$51)+(Q3*'96 Actuals'!$I$45)+(R3*'96 Actuals'!$H$45))

Where:
I3= copper feeder cable u/g
O3= feeder conduit (pasted from loop module)
Q3 = copper feeder underground placement (pasted from loop module)
R3 = fiber feeder underground placement (pasted from loop module)
Inputs!$K$29 = underground metallic life
Inputs!$K$35 = Adjusted projection life (years) for Conduit Systems
CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab
Inputs!$G$70 = structure fraction assign. to telephone for undgd. feeder: density zone 650-850
'96 Actuals'!$F$51 = ARMIS Expense to Investment Factor for Conduit Systems
'96 Actuals'!$I$45 = Alternative Cable Maintenance Factor for Copper Underground Cable
'96 Actuals'!$H$45 = Alternative Cable Maintenance Factor for Fiber Underground Cable

April 6 Version

Cell DM3=(I3*INDEX(KACF,17))+(Q3*CJ3)*INDEX(KACF,23)

Cell DO3=(O3*INDEX(KACF,23))+((O3)*'96 Actuals'!$F$51)+(Q3*CJ3*'96
Actuals'!$I$45)+(R3*CJ3*'96 Actuals'!$H$45)

June 2 Version

Cell DM3= =(I3*((1-(Inputs!$K$29-
TRUNC(Inputs!$K$29)))*INDEX(CCCFact,Inputs!$N$29,TRUNC(Inputs!$K$29))
+(Inputs!$K$29-
TRUNC(Inputs!$K$29))*INDEX(CCCFact,Inputs!$N$29,1+TRUNC(Inputs!$K$29)
)))+((Q3*CJ3)*((1-(Inputs!$K$35-
TRUNC(Inputs!$K$35)))*INDEX(CCCFact,Inputs!$N$35,TRUNC(Inputs!$K$35))
+(Inputs!$K$35-
TRUNC(Inputs!$K$35))*INDEX(CCCFact,Inputs!$N$35,1+TRUNC(Inputs!$K$35)
)))

Cell DO3=(O3*((1-(Inputs!$K$35-
TRUNC(Inputs!$K$35)))*INDEX(CCCFact,Inputs!$N$35,TRUNC(Inputs!$K$35))
+(Inputs!$K$35-

TRUNC(Inputs!$K$35))*INDEX(CCCFact,Inputs!$N$35,1+TRUNC(Inputs!$K$35)
)))+((O3+((Q3+R3)*CJ3))*'96 Actuals'!$F$51)

Issue No. 15g). Structure Sharing – Feeder (Same Issue as Attachment P1 of February 12, 1999, Ex Parte)

GTE pointed out that the expense cost of the structure did not take into account sharing of the structure while they were correctly shared when calculating capital cost. These were incorporated in the April 6 version and have been retained in the June 2 version.

January 19 Version
Cell DH3 of the Investment Input Tab in the Wire Center expense module
=(O3*((1-(Inputs!$K$35-
TRUNC(Inputs!$K$35)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$35))+(Inputs!K
35-
TRUNC(Inputs!$K$35))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$35))))+((O3+Q
3+R3)*'96 Actuals'!$F$51)

Suggested Change in GTE ex parte
Proposed Formula=(O3*((1-(Inputs!$K$35-
TRUNC(Inputs!$K$35)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$35))+(Inputs!K
35-
TRUNC(Inputs!$K$35))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$35))))+((O3*'96
Actuals'!$F$51)+((Q3*'96 Actuals'!$I$45)+(R3*'96
Actuals'!$H$45))*Inputs!$G$70)

Where:
O3= feeder conduit (pasted from loop module)
Q3 = copper feeder underground placement (pasted from loop module)
R3 = fiber feeder underground placement (pasted from loop module)
Inputs!$K$35 = Adjusted projection life (years) for Conduit Systems
CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab
Inputs!$G$70 = structure fraction assign. to telephone for undgd. feeder: density zone 650-850
'96 Actuals'!$F$51 = ARMIS Expense to Investment Factor for Conduit Systems
'96 Actuals'!$I$45 = Alternative Cable Maintenance Factor for Copper Underground Cable
'96 Actuals'!$H$45 = Alternative Cable Maintenance Factor for Fiber Underground Cable

April 6 Version

=(O3*INDEX(KACF,23))+((O3)*'96 Actuals'!$F$51)+(Q3*CJ3*'96 Actuals'!$I$45)+(R3*CJ3*'96 Actuals'!$H$45)

June 2 Version

=(O3*((1-(Inputs!$K$35-TRUNC(Inputs!$K$35)))*INDEX(CCCFact,Inputs!$N$35,TRUNC(Inputs!$K$35))+(Inputs!$K$35-TRUNC(Inputs!$K$35))*INDEX(CCCFact,Inputs!$N$35,1+TRUNC(Inputs!$K$35)))+((O3+((Q3+R3)*CJ3))*'96 Actuals'!$F$51)

Issue No. 15h). Structure Sharing – Distribution (Same Issue as Attachment P2 of February 12, 1999, Ex Parte)

GTE pointed out that the distribution underground conduit cost failed to take into account the structure sharing in the expense costs while these were correctly accounted for in the capital costs. The effect of this correction would be to lower costs. This suggestion was incorporated in the April 6 version along with another GTE suggestion regarding using average sharing rather than using the sharing for the middle density zone. This change has not been reversed in the June 2 version.

January 19 Version:
Cell CN3 of the Investment Input Tab in the Wire Center expense module
=(Z3*Inputs!$E$70)*((1-(Inputs!$K$35-TRUNC(Inputs!$K$35)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$35))+(Inputs!$K$35-TRUNC(Inputs!$K$35))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$35)))+(Z3*'96 Actuals'!$F$51)

Suggested Change in GTE ex parte
Proposed Formula =(Z3*Inputs!$E$70)*((1-(Inputs!$K$35-TRUNC(Inputs!$K$35)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$35))+(Inputs!$K$35-TRUNC(Inputs!$K$35))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$35)))+(Z3*'96 Actuals'!$F$51*Inputs!$E$70)

Where:
Z3 = distribution conduit placement (pasted from loop module)
Inputs!$E$70 = structure fraction assign. to telephone for undergr.distrib.: density zone 650-850
Inputs!$K$35 = Adjusted projection life (years) for Conduit Systems
CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab
'96 Actuals'!$F$51 = ARMIS Expense to Investment Factor for Conduit Systems

April 6 Version

=(Z3*CG3)*(INDEX(KACF,23)+'96 Actuals'!$F$51)

June 2 Version

=(Z3*CG3)*((1-(Inputs!$K$35-
TRUNC(Inputs!$K$35)))*INDEX(CCCFact,Inputs!$N$35,TRUNC(Inputs!$K$35))
+(Inputs!$K$35-
TRUNC(Inputs!$K$35))*INDEX(CCCFact,Inputs!$N$35,1+TRUNC(Inputs!$K$35)
))+(Z3*CG3*'96 Actuals'!$F$51)

Where:
CG3 = wtd avg sharing fraction -- distribution underground

The following examples are instances where changes made per GTE's suggestions that lowered costs that were corrected but were then reversed in the current version of the model.

Issue No. 15c). MDF/Protector (Same Issue as Attachment M3 of February 12, 1999, Ex Parte)

GTE pointed out that the life of MDF/Protector should not be the life of circuit equipment but should be the life of a switch or a composite of switch and outside plant life. In the intermediate version on April 6, this was changed to the life of a switch; but, in the latest version, the change has been reversed and the life of circuit equipment is again used.

January 9 Version
Cell DM3 of the Investment Input Tab in the Wire Center expense module.
=(AO3*((1-(Inputs!$K$23-
TRUNC(Inputs!$K$23)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$23))+(Inputs!K
23-
TRUNC(Inputs!$K$23))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$23))))+(AO3*'9
6 Actuals'!$H$19)

Suggested Change in GTE ex parte
Proposed Formula: Instead of Inputs!$K$23 we should use
(Inputs'!$K$37 * (SUM('Investment Input'!K:K)+SUM('Investment Input'!X:X) +
SUM('Investment Input'!I:I)+SUM('Investment Input'!V:V) +SUM('Investment
Input'!J:J)+SUM('Investment Input'!W:W))+ (Inputs'!$K$38 * (SUM('Investment
Input'!N:N)+SUM('Investment Input'!AZ:AZ)+SUM('Investment
Input'!BG:BG)+SUM('Investment Input'!BN:BN)+ SUM('Investment
Input'!L:L)+SUM('Investment Input'!AX:AX)+SUM('Investment
Input'!BE:BE)+SUM('Investment Input'!BL:BL)+ SUM('Investment

Input'!M:M)+SUM('Investment Input'!AY:AY)+SUM('Investment Input'!BF:BF)+SUM('Investment Input'!BM:BM))+(Inputs'!$K$23* SUM('Investment Input'!AN:AN))
/(SUM('Investment Input'!K:K)+SUM('Investment Input'!X:X) + SUM('Investment Input'!I:I)+SUM('Investment Input'!V:V) +SUM('Investment Input'!J:J)+SUM('Investment Input'!W:W)+ SUM('Investment Input'!N:N)+SUM('Investment Input'!AZ:AZ)+SUM('Investment Input'!BG:BG)+SUM('Investment Input'!BN:BN)+ SUM('Investment Input'!L:L)+SUM('Investment Input'!AX:AX)+SUM('Investment Input'!BE:BE)+SUM('Investment Input'!BL:BL)+ SUM('Investment Input'!M:M)+SUM('Investment Input'!AY:AY)+SUM('Investment Input'!BF:BF)+SUM('Investment Input'!BM:BM)+SUM('Investment Input'!AN:AN))

Where:
AO3 = MDF / protector investment (pasted values)
Inputs!$K$23 = Adjusted projection life (years) for Digital Circuit Equipment
CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab
'96 Actuals'!$H$19 = alternative CO switching factor
Inputs!$K$37 = Life for Average Metallic Cable (calculated)
Inputs!$K$37 = Life for Average Non Metallic Cable (calculated)
'Investment Input'!K = copper feeder cable aerial Investment
'Investment Input'!X = Distribution cable aerial Investment
'Investment Input'!J = copper feeder cable buried Investment
'Investment Input'!W = Distribution cable buried Investment
'Investment Input'!I = copper feeder cable underground Investment
'Investment Input'!V = Distribution cable underground Investment
'Investment Input'!N = fiber feeder cable aerial Investment
'Investment Input'!AZ = Common transport aerial Investment
'Investment Input'!BG = direct transport, aerial Investment
'Investment Input'!BN = dedicated transport, aerial Investment
'Investment Input'!L = fiber feeder cable underground Investment
'Investment Input'!AX = common transport, underground Investment
'Investment Input'!BE = direct transport, underground Investment
'Investment Input'!BL = dedicated transport, underground Investment
'Investment Input'!M = fiber feeder cable buried Investment
'Investment Input'!AY = common transport, buried Investment
'Investment Input'!BF = direct transport, buried Investment
'Investment Input'!BM = dedicated transport buried Investment
'Investment Input'!AN = End office switching Investment

<u>April 6 Version</u>

=AO3*(INDEX(KACF,9)+'96 Actuals'!$H$19)

<u>June 2 Version</u>

=(AO3*((1-(Inputs!$K$23-
TRUNC(Inputs!$K$23)))*INDEX(CCCFact,Inputs!$N$23,TRUNC(Inputs!$K$23))
+(Inputs!$K$23-
TRUNC(Inputs!$K$23))*INDEX(CCCFact,Inputs!$N$23,1+TRUNC(Inputs!$K$23)
)))+(AO3*'96 Actuals'!$H$19)

Issue No. 15j). Land Capital Cost (Same Issue as Attachment R of February 12, 1999, Ex Parte)

An incorrect equity fraction was used for calculating the grossed up tax for land. This was corrected in the April 6 version; but, the incorrect equity fraction has been restored in the current version on June 2.

January 19 Version
Cell DK3 of the Investment Input Tab
=(AP3*((1-(Inputs!$K$16-
TRUNC(Inputs!$K$16)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$16))+(Inputs!K
16-
TRUNC(Inputs!$K$16))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$16))))+(AP3*'9
6
Actuals'!$F$11)+((AQ3*Inputs!$D$14)+((EquityP*(AQ3*Inputs!$C$11)*Inputs!$C
$46)/(1-Inputs!$C$46)))

Suggested Change in GTE ex parte
Proposed Formula =(AP3*((1-(Inputs!$K$16-
TRUNC(Inputs!$K$16)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$16))+(Inputs!K
16-
TRUNC(Inputs!$K$16))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$16))))+(AP3*'9
6
Actuals'!$F$11)+((AQ3*Inputs!$D$14)+((EquityF*(AQ3*Inputs!$C$11)*Inputs!$C
$46)/(1-Inputs!$C$46)))

Where:
AP3 = end office wire center investment (pasted from loop module)
AQ3 = land investment (pasted from loop module)
Inputs!$K$16 = Adjusted projection life (years) for Buildings
CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab
'96 Actuals'!$F$11 = ARMIS Expense to Investment Factor for Buildings
Inputs!$D$14 = Overall Average Cost of Capital (i.e., WACC)
Inputs!$C$11 = Cost of Equity
EquityP = Weighted Equity Fraction (i.e., of the overall WACC, what proportion is attributable to the return on equity;
Inputs!$C$46 = Composite State & Federal Tax Rate
EquityF = Equity Fraction

April 6 Version

=AP3*(INDEX(KACF,4)+'96 Actuals'!$F$11)+(AQ3*GrUpROR)

June 2 Version

=(AP3*((1-(Inputs!$K$16-
TRUNC(Inputs!$K$16)))*INDEX(CCCFact,Inputs!$N$16,TRUNC(Inputs!$K$16))
+(Inputs!$K$16-
TRUNC(Inputs!$K$16))*INDEX(CCCFact,Inputs!$N$16,1+TRUNC(Inputs!$K$16)
)))+(AP3*'96
Actuals'!$F$11)+((AQ3*Inputs!$D$14)+((EquityP*(AQ3*Inputs!$C$11)*Inputs!$C
$46)/(1-Inputs!$C$46)))

The following is an instance where GTE's proposed change, that would have increased costs, was ignored.

Issue No. 15f). Signaling (Same Issue as Attachment O of February 12, 1999, Ex Parte)

A difference in the methodology is found in the way the Density Zone module and Wire Center module assign the local portion of the signaling costs. In the Density Zone file, the UNE costs for signaling are first calculated on a cost per call basis. To arrive at the cost per line for universal service fund (USF) calculations the UNE cost is multiplied by the factor:

> (Interoffice Local Actual/ Min * Interlata Calls Completed / IXC switched access MOU/switched lines).

In the Wire Center module, the USF cost is derived from the total signaling cost by multiplying it by the factor:

> (Interoffice Local Actual/ Min/ Total Actual/ Min/ switched lines)

Since the two multiplying factors differ, the USF costs for signaling are also likely to be different in the two modules. Aside from the difference mentioned above, it is incorrect to use the ratio of InterLATA Calls Completed and IXC switched access MOU in the Density Zone module. The appropriate ratio should have been derived using Total Interoffice Calls Completed and Total interoffice switched access minutes. In the same way in the Wire Center module, the Total Actual Min used in the denominator ought to be replaced by Total Interoffice Actual Min since signaling costs are likely to arise only from interoffice calls.

January 19 Version
Cell HQ3 of the Investment Input Tab in the Wire Center expense module

=(((((GJ3*((DO3+DP3)/(DQ3+DR3+DO3+DP3)))*(Inputs!$C$102/Inputs!$C$105)
)/(C3+D3+F3))/12)/Inputs!$C$20)/(1-'96 Actuals'!$F$141)

where:
GJ3= Signaling Total Cost
DO3 = STP Direct Cost
DP3 = Links Direct Cost
DQ3 = SCP Direct Cost
DR3 = SCP Wire Center Direct Cost
C3 = business lines
D3 = residential lines
F3 = public lines
Inputs!$C$102 = Interoffice Local Actual Min
Inputs!$C$105 = Total Actual Min
Inputs!$C$20 = Local call completion fraction
'96 Actuals'!$F$141 = retail Uncollectible factor

No Change in the April 6 Version or the June 2 Version

The following is an instance where the impact of GTE's proposed change is indeterminate but has been ignored.

Issue No. 15d). Drop and Terminal (Same Issue as Attachment N1 of February 12, 1999, Ex Parte)

GTE suggested a weighted average of cable lives instead of the inexplicable averaging used. In the intermediate version on April 6, a life of 19 years was assigned without any explanation instead of the explicit formula. In the current version on June 2, the inexplicable averaging used in the original version has again been used, thus ignoring the suggestions made.

January 19 Version

Cell CP3 of the Investment Input Tab in the Wire Center expense module
=(AI3*((1-(Inputs!$K$37-
TRUNC(Inputs!$K$37)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$37))+(Inputs!K
37-
TRUNC(Inputs!$K$37))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$37))))+(AI3*'96
Actuals'!$F$52)

Cell CR3 of the Investment Input Tab in the Wire Center expense module
=AH3*((1-(Inputs!$K$25-
TRUNC(Inputs!$K$25)))*INDEX(CCCFact,1,TRUNC(Inputs!$K$25))+(Inputs!K
25-

TRUNC(Inputs!$K$25))*INDEX(CCCFact,1,1+TRUNC(Inputs!$K$25)))+(AH3*'96 Actuals'!$F$52)

Suggested Change in GTE ex parte
Proposed Formula: Instead of Inputs!$K$25 or Inputs!$K$37 in the above formulae we should use

((Inputs!$K$27 * (SUM('Investment Input'!K:K)+SUM('Investment Input'!X:X))) +(Inputs!$K$29 * (SUM('Investment Input'!I:I)+SUM('Investment Input'!V:V))) + (Inputs!$K$31 *(SUM('Investment Input'!J:J)+SUM('Investment Input'!W:W))))
/(SUM('Investment Input'!K:K)+SUM('Investment Input'!X:X)
+SUM('Investment Input'!I:I)+SUM('Investment Input'!V:V)
+SUM('Investment Input'!J:J)+SUM('Investment Input'!W:W))

Where:
AI3 = drop investment (pasted from loop module)
Inputs!$K$37 = Adjusted projection life (years) for Average Metallic Cable
CCCFact = Capital Cost Factors (Row 2) on the CCCFactor Tab
'96 Actuals'!$F$52 = ARMIS Expense to Investment Factor: Cable & Wire Facilities
AH3 = terminal investment (pasted from loop module)
Inputs!$K$25 = Adjusted projection life (years) for NID & SAI
Inputs!$K$27 = Life for Aerial Cable – Metallic
Inputs!$K$29 = Life for Underground Cable - Metallic
Inputs!$K$31 = Life for Buried Cable - Metallic
'96 Actuals'!$I$44 = Alternative Cable Maintenance Factor for Copper Aerial Cable
'96 Actuals'!$I$46 = Alternative Cable Maintenance Factor for Copper Buried Cable
'Investment Input'!K = copper feeder cable aerial Investment
'Investment Input'!X = Distribution cable aerial Investment
'Investment Input'!J = copper feeder cable buried Investment
'Investment Input'!W = Distribution cable buried Investment
'Investment Input'!I = copper feeder cable underground Investment
'Investment Input'!V = Distribution cable underground Investment

April 6 Version:
Inputs!$K$25 = 19

June 2 Version:

=(AI3*((1-(Inputs!$K$37-
TRUNC(Inputs!$K$37)))*INDEX(CCCFact,Inputs!$N$37,TRUNC(Inputs!$K$37))
+(Inputs!$K$37-

TRUNC(Inputs!$K$37))*INDEX(CCCFact,Inputs!$N$37,1+TRUNC(Inputs!$K$37)
)))+(AI3*'96 Actuals'!$F$52)

=AH3*((1-(Inputs!$K$25-
TRUNC(Inputs!$K$25)))*INDEX(CCCFact,Inputs!$N$25,TRUNC(Inputs!$K$25))
+(Inputs!$K$25-
TRUNC(Inputs!$K$25))*INDEX(CCCFact,Inputs!$N$25,1+TRUNC(Inputs!$K$25)
))+(AH3*'96 Actuals'!$F$52)

The following are instances where the impact of GTE's proposed changes are indeterminate but have been corrected and retained.

Issue No. 15i). Average Non-metallic Cable Life (Same Issue as Attachment Q of February 12, 1999, Ex Parte)

GTE pointed out that an incorrect formula was used in the Density Zone expense module for the average non-metallic cable life since it used only aerial investment for zone 850-2550 instead of investments for all density zones. The calculation was not explicitly shown in the April 6 version and it is not possible to examine whether the error was corrected. However, in the current version on June 2, the correction has been made.

January 19 Version:
Cell L28 of the Inputs Tab in the Density Zone expense module
='Investment Input'!O21+'Investment Input'!BA21+'Investment
Input'!BH17+'Investment Input'!BO17

Suggested Change in GTE ex parte
Proposed Formula ='Investment Input'!O21+'InvestmentInput'!BA21+'Investment Input'!BH21+'Investment Input'!BO21

Where:
'Investment Input'!O21 = fiber feeder cable aerial total investment
'Investment Input'!BA21 = common transport, aerial total investment
'Investment Input'!BH17 = direct transport, aerial for density zone 650-850
'Investment Input'!BO17 = dedicated transport, aerial for density zone 650-850
'Investment Input'!BH21 = direct transport, aerial total investment
'Investment Input'!BO21 = dedicated transport, aerial total investment

The calculation in the April 6 Version was not shown and, therefore, it is not clear if it were corrected. If it were corrected, it is not as suggested by GTE.

June 2 Version
='Investment Input'!O21+'Investment Input'!BA21+'Investment Input'!BH21+'Investment Input'!BO21

Issue No. 16). Sharing Percentage (Same Issue as Attachment T of February 12, 1999, Ex Parte)

GTE pointed out that instead of using the structure sharing percentage of the density zone 650-850, the model should use an average sharing percentage. These were incorporated in the intermediate version on April 6 using a weighted average. This change has been retained in the final version on June 2.